

Cummins Technical Operations



ENGINE MODEL: 6BT5.9-C150
CURVE & DATASHEET: FR91474

REV 00 15Nov2005



Engine Performance Curve

Basic Engine Model:
6BT5.9-C150

Curve Number:
FR91474

Pg. No.

Engine Family:
D40

CPL Code:
1189-02

Date:
2005-11

01

Displacement: **5.9 L**
Bore: **102 mm**
Stroke: **120 mm**
Emission Control: **NONE**

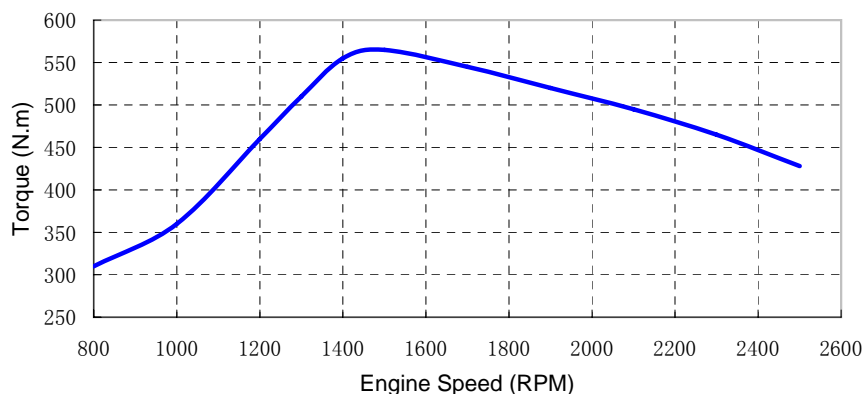
Aspiration: **Turbocharged**

No. of Cylinders: **6**
Fuel system: **Inline-WEIFU A/RSV**

kW (BHP) @ RPM
112 (150) 2500
8% Governor Regulation

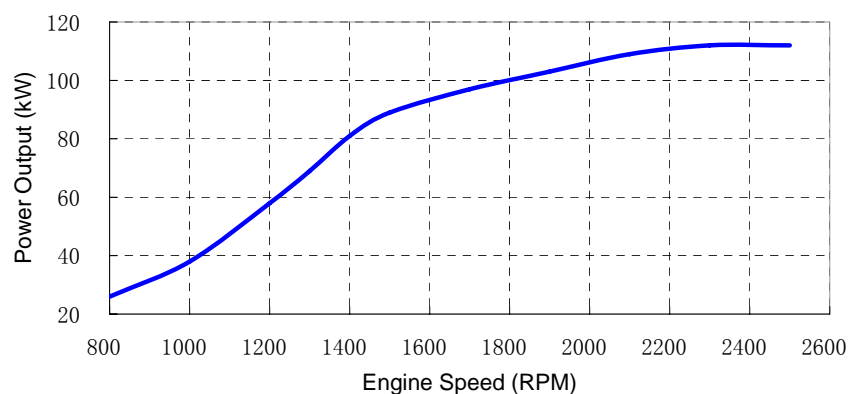
All data are based on the engine operating with fuel system, water pump, lubricating oil pump, and 250 mm H₂O (10 in. H₂O) inlet air restriction and with 50 mm Hg (2.0 in. Hg) exhaust restriction; not included are alternator, fan, optional equipment and driven components.

Performance curve



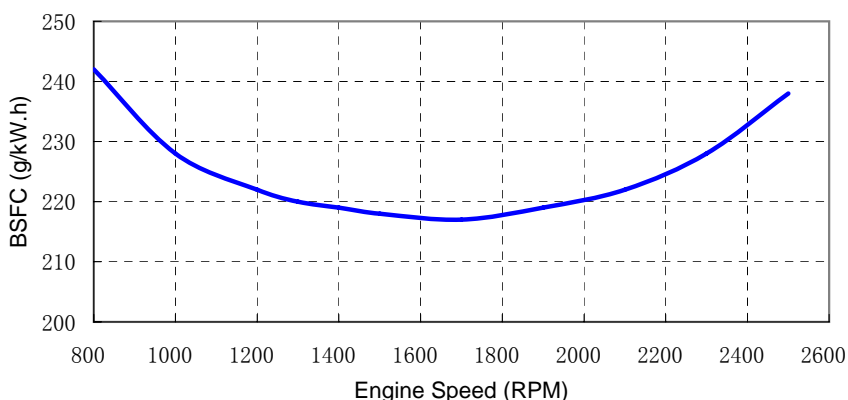
TORQUE

RPM	N.m
800	310
1000	360
1200	460
1300	510
1400	555
1500	565
1700	545
1900	520
2100	495
2300	465
2500	428



POWER OUTPUT

RPM	kW
800	26
1000	38
1200	58
1300	69
1400	81
1500	89
1700	97
1900	103
2100	109
2300	112
2500	112



FUEL CONSUMPTION

RPM	g/kW.h
800	242
1000	228
1200	222
1300	220
1400	219
1500	218
1700	217
1900	219
2100	222
2300	228
2500	238

All performance data based on the standard status and GB/T18297 conditions.



Base Engine Data Sheet

Pg. No.

02

ENGINE MODEL:	6BT5.9-C150	CPL NUMBER:	1189-02	DATE:	15Nov05
CONFIGURATION NUMBER:	D402056CX02	CPL NUMBER:	FR91474		
AFTERCOOLED SYSTEM:	NONE	RATED POWER:	150 bhp @ 2500rpm		
FUEL SYSTEM:	Inline - WEIFU A/RSV		112 kW @ 2500rpm		

GENERAL ENGINE DATA

Engine Wet Weight (Pricing Configuration).....	-kg	432
Moment of Inertia of Rotating Components (No Flywheel).....	-kg·m ²	0.25
Center of Gravity from Front Face of Block.....	-mm	391
Center of Gravity above Crankshaft Centerline.....	-mm	140
Crankshaft Thrust Bearing Load Limit		
—Maximum Intermittent.....	-N	3425
—Maximum Continuous.....	-N	1112

ENGINE MOUNTING

Maximum (Static) Bending Moment at Front Support Mounting Surface.....	-N·m	435
Maximum (Static) Bending Moment at Side Pad Mounting Surface.....	-N·m	TBD
Maximum (Static) Bending Moment at Rear Face of Block.....	-N·m	1356
Moment of Inertia of Complete Engine		
— Roll Axis.....	-kg·m ²	16.5
— Pitch Axis.....	-K·kg·m ²	41.1
— Yaw Axis.....	-K _z ·kg·m ²	35.4

EXHAUST SYSTEM

Maximum Back Pressure.....	-mmHg	76
Exhaust Pipe Size Normally Acceptable.....	-mm	75
Maximum Static Supported Weight at the Turbocharger Outlet Flange.....	-N·m	13.5
Exhaust Manifold Insulation Acceptable.....	-Yes/No	No
Turbocharger Insulation Acceptable.....	-Yes/No	No

AIR INTAKE SYSTEM

Maximum Intake Air Restriction with Heavy Duty Air Cleaner		
— Clean Element.....	-mmH ₂ O	381
— Dirty Element.....	-mmH ₂ O	635
Minimum Dirt Holding Capacity with Heavy Duty Air Cleaner.....	-g/litre/sec.	53
Maximum Temperature Rise from Ambient to the Inlet of the Turbocharger.....	-°C	17
Maximum Pressure Drop from the Turbocharger Outlet to the Intake Manifold.....	-kPa	TBD

LUBRICATION SYSTEM

Normal Operating Oil Pressure Range.....	-kPa	69 - 345
Maximum Lube Oil Flow for Engine Accessories.....	-litre/min.	4.0
Maximum Sump Oil Temperature.....	-°C	127
Minimum Engine Oil Pressure for Engine Protection Devices:		
— At Rated Speed and Load.....	-kPa	276
— At Torque Peak Speed and Load.....	-kPa	207
— At Low Idle.....	-kPa	69
Minimum Required Lube System Capacity - Sump plus Filters.....	-litre	16.3
By-pass Filtration Required.....	-Yes/No	No
Angularity of Standard Oil Pan: (Values stated are for intermittent operation only):		
— Front Down.....	- °	35
— Front Up.....	- °	35
— Side to Side.....	- °	35

**COOLING SYSTEM**

Coolant Capacity - Engine Only.....	-litre	9.9
Maximum Engine Cooling Circuit External Resistance.....	-kPa	34
Minimum Pump Inlet Pressure with Open Thermostat and no Pressure Cap.....	-mmHg	TBD
Maximum Static Head of Coolant Above Engine Crankshaft Centerline.....	-m	TBD
Standard (modulating) Thermostat Range.....	-°C	82-93
Maximum Block Coolant Pressure with Closed Thermostat and no Pressure Cap.....	-kPa	276
Minimum Pressure Cap.....	-kPa	50
Maximum Engine Coolant Temperature at Engine Outlet.....	-°C	100
Maximum Engine Coolant Temperature for Engine Protection Devices.....	-°C	101.6
Minimum Engine Coolant Temperature.....	-°C	71
Minimum Fill Rate.....	-litre/min.	19
Maximum Initial Fill Time.....	-min.	5
Minimum Coolant Expansion Space.....	- %of System Capacity	6
Maximum Deaeration Time.....	-min.	25
Minimum Drawdown.....	— % of Total System Capacity	11%
(Drawdown Must Exceed the Volume Not Filled at Initial Fill & Must Not Include Expansion Space)		
Fan-on Engine Coolant Outlet Temperature.....	-°C	93
Shutter Opening Coolant Outlet Temperature.....	-°C	85
Shutter Opening Intake Manifold Air Temperature.....	-°C	N/A

CRANKING SYSTEM

Minimum Battery Capacity - Cold Soak at 0°F (-18°C) or Above	12V	24V
— Engine Only - Cold Cranking Amperes.....	-CCA	950 475
— Engine Only - Reserve Capacity.....	-min.	260 130
Maximum Starting Circuit Voltage Drop @ ----Amperes.....	-Volts	TBD
Minimum Ambient Temperature for Unaided Cold Start.....	-°C (-°F)	-12
Minimum Cranking Speed Required for Unaided Cold Start.....	-rpm	125
Breakaway Torque at Minimum Unaided Start Temperature.....	-N.m(lb.-ft.)	TBD
Cranking Torque at Minimum Unaided Start Temperature.....	-N.m(lb.-ft.)	TBD
Cranking Torque at -10°F.....	-N.m(lb.-ft.)	TBD

FUEL SYSTEM

Maximum Fuel Flow on the Supply Side of the Fuel Pump.....	-kg/hr	193
Maximum Fuel Inlet Restriction		
— with clean fuel filter.....	-mmHg	102
— with dirty fuel filter.....	-mmHg	203
Maximum Fuel Drain Restriction		
— with check valves.....	-mmHg	TBD
— less check valves.....	-mmHg	510
Maximum Fuel Inlet Temperature.....	-°C	71
Minimum Fuel Tank Air Venting Capability Required at 6 in. H ₂ O Back Pressure.....	-litre/hr	340

Fuel system can option fuel pump solenoid:

- if without the fuel pump solenoid then the option FP is FP90286 and fuel pump outline drawing is 3974629.
- if with the fuel pump solenoid then the option FP is FP90287 and fuel pump outline drawing is 3975421.



Low Idle Set Speed.....	-rpm	750
Maximum Governed Speed (10% of Rated Torque)	-rpm	2700
Maximum Overspeed Capability.....	-rpm	3750
Maximum altitude limit restriction		
—Continuous.....	-m	TBD
Closed Throttle Torque @ 700 rpm (for 900 rpm Low Idle Speed).....	-N.m	TBD
Throttle Angle		
—High Idle.....	Deg.	102 ± 4
—Low Idle.....	-° Deg.	75 ± 4
—Delta.....	-°C Deg.	27
Throttle Angle at Engine Shutdown		
—Engine Work.....	Deg.	94 ± 4
—Engine Shutdown.....	Deg.	32 ± 4

EMISSIONS:

Estimated Free Field Sound Pressure Level At 15 m (50 ft.) and Full-Load Governed Speed
(Excludes Noise from Intake, Exhaust, Cooling System and Driven Components)

—Right Side.....	-dBa	TBD
—Left Side.....	-dBa	TBD
—Front.....	-dBa	TBD
—Rear.....	-dBa	TBD

Gaseous Emissions per ISO 8178:

—Weight-Specific NOx.....	-g/bhp-hr.	TBD
—Weight-Specific HC.....	-g/bhp-hr.	TBD
—Weight-Specific CO.....	-g/bhp-hr.	TBD
—Weight-Specific Particulates.....	-g/bhp-hr.	TBD

Fuel Rating Option used for these Data: **FR91474**

	RATED POWER	MAXIMUM POWER POINT	PEAK TORQUE
Engine Speed.....	2500		1500
Gross Power Output.....	112		89
Torque.....	428		565
Intake Manifold Pressure.....	115		80
Motoring Friction Horsepower.....	24		11
Turbocharger Compressor Outlet Pressure.....	120		83
Intake Air Flow.....	216		135
Exhaust Gas Flow.....	540		310
Exhaust Gas Temperature - Dry Stack.....	480		510
Heat Rejection to Ambient (Dry Manifold).....	N/A		N/A
Heat Rejection to Coolant (Dry Manifold).....	92		53.6
Heat Rejection to Fuel.....	0.8		0.3
Engine Coolant Flow.....	3.4		2
External Cooling Circuit Resistance.....	N/A		N/A
Altitude Limitations:			
—Intermittent.....	3500		3500
—Continuous.....	3000		3000
Steady State Smoke.....	1.5		2.5

ALL DATA CERTIFIED WITHIN 5%

TBD = To Be Decided

N/A = Not Applicable

N.A. = Not Available

All data is subject to change without notice, sorry for inform.